

In th Specification:

Please amend the title to:

--METHOD OF FORMING A PHASE CHANGE THERMAL INTERFACE MATERIAL--.

The following paragraph is inserted after the title:

This Application claims the benefit of U.S. Provisional Application Serial No. 60/142,751, filed July 8, 1999, Application Serial No. 09/482,590, filed January 13, 2000, now U.S. Patent No. 6,391,442, and Application Serial No. 10/123,324, filed April 16, 2002.

In the Summary of the Invention, the paragraphs beginning at page 3, line 18 and ending on page 4, line 19 are amended as follows:

~~In accordance with one aspect of the present invention, a thermal interface material, which undergoes a phase change at microprocessor operating~~
20 ~~temperatures to transfer heat generated by a heat source to a heat sink, is provided. The thermal interface material includes a phase change substance, which softens at about the operating temperature of the heat source. The phase change substance includes a polymer component and a melting point component. The melting point component modifies the temperature at which the phase~~
25 ~~change substance softens. The thermal interface material further includes a thermally conductive filler dispersed within the phase change substance.~~

In accordance with another aspect of the present invention, a multi-layer strip is provided. The strip includes a layer of a thermal interface material for thermally connecting a heat source with a heat sink. The thermal interface material includes a polymer component, a melting point component in sufficient quantity to adjust the softening temperature of the interface material to about the operating temperature of the heat source, and a thermally conductive filler mixed with the melting point component and the polymer component. The strip further includes an outer layer disposed on a side of the thermal interface material. The outer layer includes at least one of a protective releasable liner and a layer of an adhesive material.

In accordance with another aspect of the present invention, a method of providing a thermal interface between a heat source and a heat sink is provided. The method includes interposing a thermal interface material between the heat source and heat sink, which softens at about the operating temperature of the heat source to provide a thermal interface between the heat source and the heat sink during operation of the heat source. The thermal interface material includes a polymer component, a melting component for modifying the temperature at which the thermal interface material softens, and a thermally conductive filler mixed with the polymer component and the melting point component.

In accordance with one aspect of the present invention, a method of forming a thermal interface material is provided. The method mixing a polymer component with a melting point component and a thermally conductive filler to form the thermal interface material. The melting component modifies the temperature at which the thermal interface material softens. The melting point component melts and dissolves the polymer component in the melting point component when heated.

In accordance with another aspect of the present invention, a method of forming a thermal interface material is provided. The method includes mixing a polymer component with a melting point component and a thermally conductive filler to form the thermal interface material. The polymer component modifies the temperature at which the thermal interface material softens. The melting point component is selected from the group consisting of C₁₂-C₁₆ alcohols.

acids, esters, petroleum waxes, wax-like compounds, low molecular weight styrenes, methyl triphenyl silane materials, and combinations thereof.

5 In accordance with another aspect of the present invention, a method of forming a multi-layer strip is provided. The method includes mixing a polymer component with a melting point component and a thermally conductive
10 filler to form the thermal interface material. The polymer component modifies the temperature at which the thermal interface material softens. The melting point component is selected from the group consisting of C₁₂-C₁₆ alcohols, acids, esters, petroleum waxes, wax-like compounds, low molecular weight styrenes,
15 methyl triphenyl silane materials, and combinations thereof. A second layer is disposed on a side of the thermal interface material. The second layer includes at least one of a protective releasable liner, a layer of an adhesive material, and a reinforcing layer.

20 In accordance with another aspect of the present invention, a thermal interface material is provided. The material undergoes a phase change at microprocessor operating temperatures to transfer heat generated by a heat source to a heat sink. The material includes 10-80% of an elastomer and 10-80% of a melting point component selected from the group consisting of a C₁₂-C₁₆ alcohol, a C₁₂-C₁₆ acid, and a petroleum wax. The elastomer has a solubility
25 parameter which is within +1 and -1 of a solubility parameter of the melting point component. The material also includes 10-80% of a thermally conductive filler dispersed within the elastomer and melting point component.